

Claims

- [c1] An article of manufacture in computer readable form comprising means for performing a method for operating a computer system having a host control program (HCS) for controlling at least one tool in a semiconductor fabrication facility, said method comprising the steps of: sending commands to at least one fabrication tool of any compliant tool type that complies with a standard protocol to perform a process in an integrated circuit manufacturing sequence performed on a wafer of integrated circuits, said commands comprising a workflow of workitems; in which each of said workitems has a status flag associated therewith said flag being one of a set of categories including at least enable and disable; and each of said workitems is in the form of a java class, whereby individual ones of said workitems may be enabled or disabled and new workitems may be added to operate on a tool made by any manufacturer that complies with said standard without recompiling or restarting said HCS.
- [c2] An article of manufacture according to claim 1, further comprising a step of changing a sequence of workitems

in a workflow without recompiling said HCS.

- [c3] An article of manufacture according to claim 1, in which said HCS contains a configurable set of rules that control the gathering of information by said HCS from said tool, further comprising a step of changing a configuration of said set of rules without recompiling said HCS.
- [c4] An article of manufacture according to claim 1, in which said method further comprises a setup step for a particular tool, in which data are entered in a template and are automatically converted to workitems in the correct format by said HCS, without further human intervention.
- [c5] An article of manufacture according to claim 1, in which said method further comprises at least one variation step in which:
 - said HCS alters at least one command sent to said tool, thereby making changes in one or more parameters of said command;
 - said HCS then evaluates the result of said changes and retains changes that improve the performance of said tool.
- [c6] An article of manufacture according to claim 5, in which said at least one variation step is under the control of at least one of a configurable set of rules that control the

gathering of information by said HCS from said tool, whereby the range over which said HCS may vary a parameter is controlled by said set of configurable rules.

- [c7] An article of manufacture according to claim 5, in which said at least one variation step changes a member of a HCS-Tool Interface.
- [c8] An article of manufacture according to claim 3, in which said method further comprises at least one variation step in which said HCS alters at least one command sent to said tool, thereby making changes in one or more parameters of said command; said HCS then evaluates the result of said changes and retains changes that improve the performance of said tool.
- [c9] An article of manufacture according to claim 8, in which said at least one variation step is under the control of said configurable set of rules that control the gathering of information by said HCS from said tool, whereby the range over which said HCS may vary a parameter is controlled by said set of configurable rules.
- [c10] An article of manufacture according to claim 9, in which said at least one variation step changes a member of a HCS-Tool Interface.
- [c11] An article of manufacture according to claim 1, further

comprising a diagnostic module in communication with said HCS, in which said diagnostic program receives data from said HCS, evaluates said data and generates at least one modified parameter of said method.

[c12] An article of manufacture according to claim 11, in which said diagnostic program receives data from at least two HCS controlling tools that sequentially process wafers according to a recipe.

[c13] An article of manufacture according to claim 11, in which said diagnostic program receives data comprising members of said set of HCS-Tool Interface from at least one HCS.

[c14] An article of manufacture according to claim 11, in which said diagnostic program receives data from at least one HCS representing the result of a process applied by a tool controlled by that HCS.

[c15] An article of manufacture according to claim 11, in which said method further comprises at least one variation step in which:
said diagnostic program alters at least one command sent to said HCS, thereby making changes in one or more parameters of said command;
said diagnostic program then evaluates the result of said

changes and retains changes that improve the performance of said tool.

- [c16] An article of manufacture according to claim 11, in which said at least one variation step is under the control of at least one of a configurable set of rules that control the adjustment of parameters of commands from said HCS to said tool, whereby the range over which said HCS may vary a parameter is controlled by said set of configurable rules.
- [c17] An article of manufacture according to claim 11, in which said at least one variation step changes a member of a HCS-Tool Interface.
- [c18] A system for processing an integrated circuit wafer in at least one tool in a semiconductor fabrication facility, comprising:
at least one fabrication tool of any compliant tool type that complies with a standard protocol to perform a process in an integrated circuit manufacturing sequence performed on a wafer of integrated circuits;
a data processing unit in communication with said fabrication tool and having a HCS for controlling said tool:
sending commands to said tool comprising a workflow of workitems; in which each of said workitems has a status flag associated therewith said flag being one of a set

of categories including at least enable and disable; and each of said workitems is in the form of a java class, whereby individual ones of said workitems may be enabled or disabled and new workitems may be added to operate on a tool made by any manufacturer that complies with said standard without recompiling or restarting said HCS.

[c19] A system according to claim 18, in which said commands to said tool further comprises at least one variation step in which:

said HCS alters at least one command sent to said tool, thereby making changes in one or more parameters of said command;

said HCS then evaluates the result of said changes and retains changes that improve the performance of said tool.

[c20] A system according to claim 18, in which said at least one variation step is under the control of said configurable set of rules that control the gathering of information by said HCS from said tool; and said one or more parameters are members of a HCS-Tool Interface.